

Algebra Review (Hooray!)

For x:

$$\frac{ax}{by} + f = \frac{cd}{jh}$$

$$\cancel{by} \left(\frac{ax}{\cancel{by}} \right) = \left(\frac{cd}{jh} - f \right) by$$

$$\frac{\cancel{ax}}{\cancel{a}} = \frac{(by) \left(\frac{cd}{jh} - f \right)}{a}$$

$$x = \left(\frac{by}{a} \right) \left(\frac{cd}{jh} - f \right)$$

$$= \frac{bcdy}{ahj} - \frac{bfy}{a}$$

For y:

$$\frac{ax}{by} + f = \frac{cd}{jh}$$

$$\frac{ax}{by} = \left(\frac{cd}{jh} - f \right)$$

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$$\left(\frac{ax}{\frac{cd}{jh} - f} \right) \frac{1}{b} = \left(\frac{by}{1} \right) \frac{1}{b}$$

$$(b) \left(\frac{cd}{jh} - f \right) = y$$

For y :

$$\frac{ax}{by} + f = \frac{cd}{jh}$$

$$\left(\frac{\cancel{b}}{\cancel{ax}}\right) \frac{\cancel{ax}}{\cancel{by}} = \left(\frac{cd}{jh} - f\right) \left(\frac{b}{ax}\right)$$

$$\frac{1}{y} = \left(\frac{b}{ax}\right) \left(\frac{cd}{jh} - f\right)$$

$$\left[\frac{1}{y} = \frac{b \left(\frac{cd}{jh} - f \right)}{ax} \right]^{-1}$$

$$y = \frac{ax}{b \left(\frac{cd}{jh} - f \right)}$$

For d:

$$\left(\frac{jh}{c}\right)\left(\frac{ax}{by} + f\right) = \left(\frac{\cancel{cd}}{\cancel{jh}}\right)\left(\frac{\cancel{jh}}{\cancel{c}}\right)$$

$$\left(\frac{jh}{c}\right)\left(\frac{ax}{by} + f\right) = d$$

For h :

$$h \left(\frac{ax}{by} + f \right) = \left(\frac{cd}{j} \right) h$$

$$\frac{h \left(\frac{ax}{by} + f \right)}{\cancel{\left(\frac{ax}{by} + f \right)}} = \frac{cd}{j} \cdot \frac{1}{\left(\frac{ax}{by} + f \right)}$$

$$h = \frac{cd}{j \left(\frac{ax}{by} + f \right)}$$